The Fertilizer Institute

Nourish, Replenish, Grow

PERSPECTIVE ON FERTILIZER PRICES

As a world market commodity, fertilizer prices are determined much like the prices of most agricultural commodities. The fact that fertilizer is a commodity means that supply and demand factors in major markets around the world impact the price U.S. farmers pay for fertilizer. The prices paid by farmers for the major fertilizer materials reached there highest level on record during the spring of 2005. What are the primary factors which have resulted in these price levels?

Increase in Global Demand

Increased global demand for fertilizer has played a large part in recent years in placing upward pressure on fertilizer prices. World fertilizer demand increased by 13 percent or an estimated 20 million nutrient tons from FY2000/01 to FY2004/05. This increase in demand is nearly equivalent to total nutrient use in the United States, which stood at 23.4 million nutrient tons during FY03/04. Over this 4 year period, world N demand grew by nearly 10 percent, phosphate demand grew by 13 percent and potash demand grew by a whopping 25 percent.

Supply Factors

Supply factors have also played a part in driving up fertilizer prices, particularly for nitrogen. Before we address that issue, we need to take a quick look at the major fertilizer nutrients and their sources of supply. While fertilizer materials can contain one, two, or all three of the macronutrients nitrogen, phosphate and potash, the sources of these nutrients vary and, thus have differing impacts on their respective prices. So let's take a look at these sources.

Nitrogen

Anhydrous ammonia is the source of nearly all the N fertilizer produced in the world. Ammonia is produced by combining N with H. The N is obtained from the atmosphere, while the H is obtained from natural gas. The cost of natural gas accounts for 70-90 percent of the production cost of ammonia. Thus, when U.S. natural gas prices increased significantly beginning in the year 2000, the cost of domestically produced ammonia also rose significantly. Average U.S. ammonia production costs doubled from 1999 to 2003, the latest year for which data are available, and are sure to have increased again in 2004 as natural gas prices have continued to rise.

While fertilizer producers can try to pass along these cost increases, the commodity nature of the business and competition from producers in N exporting countries with access to lower priced gas, limits this option. As a result, a rise in U.S. natural gas prices causes producer margins to shrink. Eventually, margins turn negative as gas prices continue to increase. Consequently, companies are forced to reduce production, temporarily idle, or even permanently close plants depending on the specific economic situation they face. And we can see the result high natural gas prices have had on the U.S. ammonia industry in figure 1.

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Overall, 16 ammonia plants have closed permanently since FY1998/99, primarily as a result of the rise in natural gas prices, and an additional 5 plants are currently idle. As a result, U.S. ammonia production fell by over 6 million tons or 34 percent in only 5 years. Consequently, the U.S. fertilizer industry, which typically supplied 85 percent of its domestic needs from U.S. based production during the 1990's, now relies on imports for nearly 45 percent of N supplies.

Phosphate

Phosphate production is natural resource based and begins with the mining of phosphate rock. The United States is the world's largest producer and exporter of phosphate fertilizer. Thus increased global demand has been the driving factor behind the recent rise in phosphate fertilizer prices. However, significantly higher costs for major production inputs like ammonia and sulfur have also placed upward pressure on the prices of the major phosphate fertilizer materials like DAP and MAP. Average U.S. production costs for ammonium phosphates increased by 20 percent from 1999 to 2003, the latest year for which data are available, and are expected to have increased again in 2004 as ammonia prices have continued to rise.

Potash

Potash production is based on the mining of potash ore and is the most concentrated of the nutrients. As a resource dependent nutrient, potash is produced in only 12 countries. Over 83% of the potash produced worldwide is imported by both producing and non-producing countries to meet their needs. While other countries impact the potash market, potash market fundamentals begin in North America. Canada is the world's largest producer and exporter of potash accounting for a third of total production and 40 percent of world trade. Nearly half of Canada's exports go to the U.S., the largest potash importer (figure 2).

After years of relative stability, North American potash prices increased significantly beginning in mid-July, 2003. Higher energy prices have resulted in higher potash production costs, putting upward pressure on prices. However, the bulk of the price increase realized since mid-2003 has resulted from the 25 percent growth in global potash demand over the past 4 years. Strong North American demand and rapidly growing demand by other major importing countries like China and Brazil resulted in a tightening of the supply-demand balance as North American potash inventories fell to their lowest level in 30 years in August of 2004 and remain tight.

Fertilizer Price Increases Below Those of Most Other Farm Inputs

Higher transportation costs have also added to the final price you pay for fertilizer. While fertilizer prices are up, when you put it in perspective, the price increases realized are in line with and even below those observed for most other major farm inputs (figure 3). Despite the significant impact of rising natural gas costs and the large increase in global fertilizer demand, average fertilizer prices in August 2005 stood 61 percent higher than their 1990-92 level, according to USDA data. In comparison, the prices of farm machinery, seed and wage rates were up 62-71 percent while fuel costs more than doubled over the same 14-year period.

Figure 1 - U.S. Ammonia Production and Net N Imports

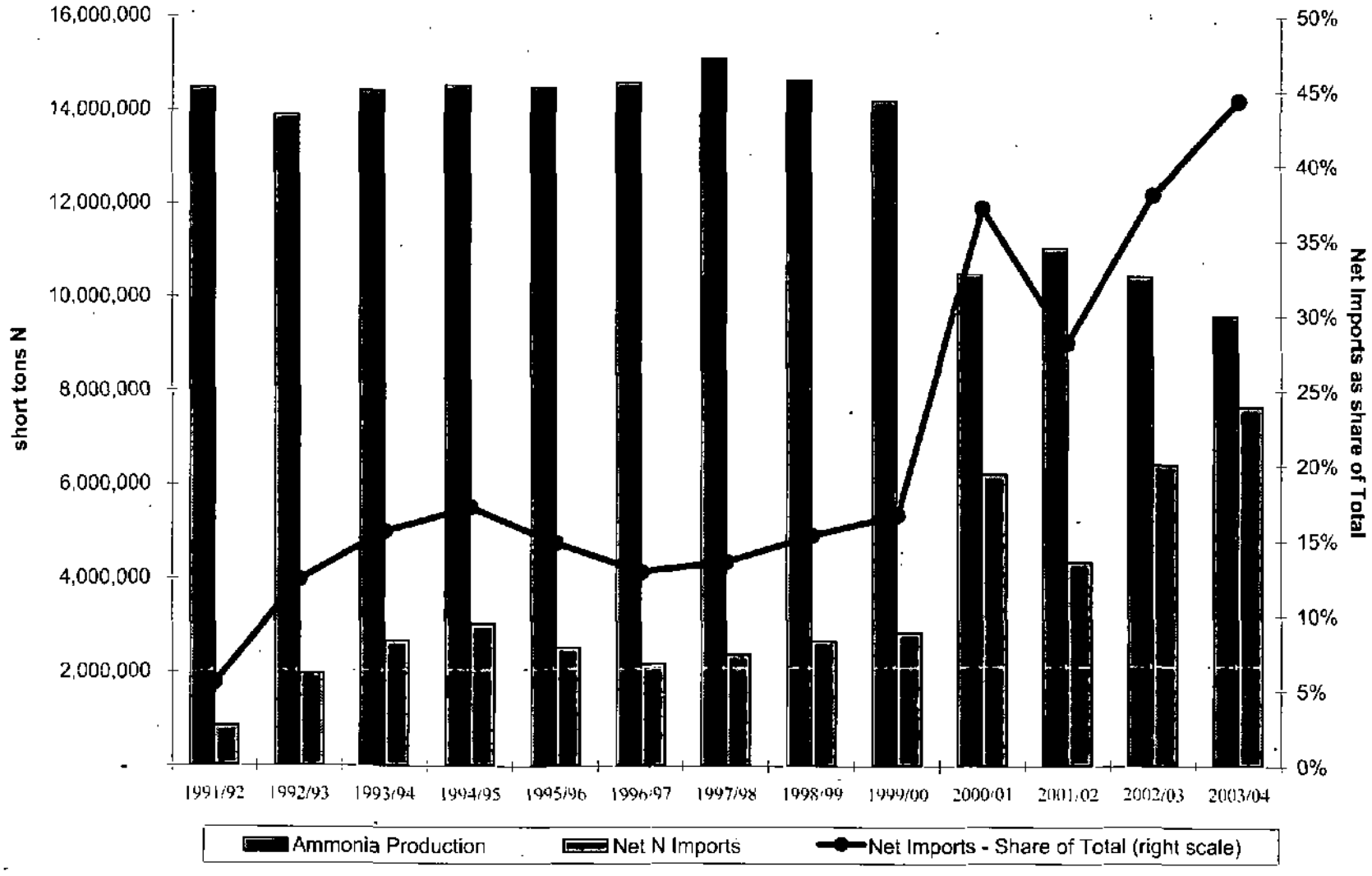


Figure 2 - U.S. Potash Production and Net K2O Imports

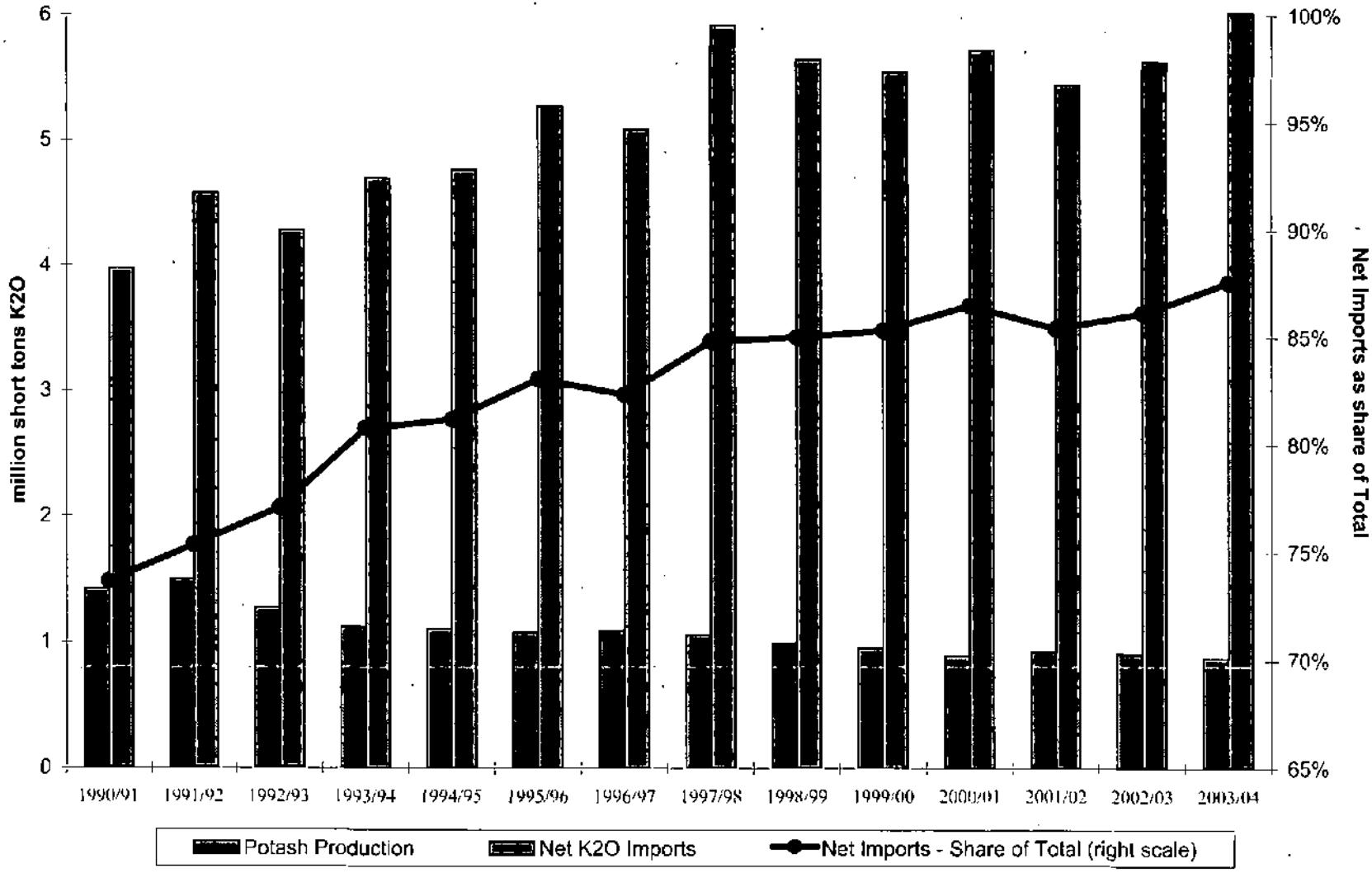
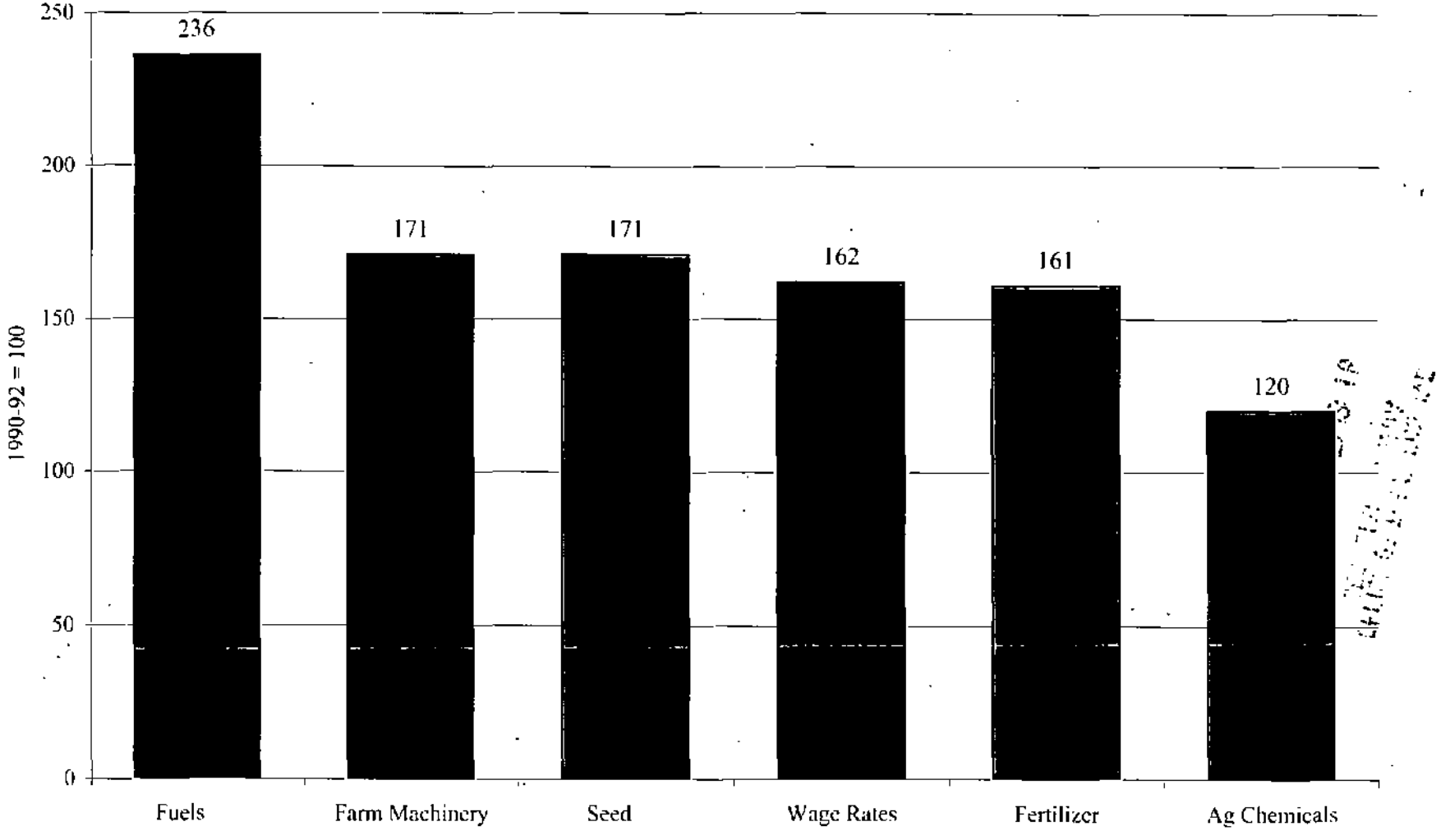


Figure 3 - Index Numbers of Input Prices Paid by Farmers, August 2005



Source: U.S. Department of Agriculture.